Geoscience Australia RNAAC – 2002 Annual Report

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Introduction

The RNAAC function of routinely processing all stations in the Australian Regional GPS Network (ARGN) continued during 2002. The weekly combined SINEX result files were submitted to the Crustal Dynamics Data Information System (CDDIS).

Station Network

The station network processed by the Geoscience Australia (GA) RNAAC as at December 2002 is shown in Figure 1. Fifteen of the nineteen stations in this network are operated by GA. The stations AUST, NNOR, PERT and TIDB are owned and operated by other agencies.

Commencing GPS week 1174 site NNOR was added to the solution. Commencing GPS week 1194 site MOBS was added to the solution.

Data Analysis and Results

The Bernese GPS Software version 4.2 (Hugentobler, Schaer and Fridez 2001) was used for the GPS data processing. Daily solutions were computed using the following strategy:

- L3 double differenced phase observable.
- No resolution of integer ambiguities.
- Elevation cut-off angle of 10°.
- Elevation dependent observation weighting.
- Estimation of tropospheric zenith delay parameters at 2 hourly intervals.
- IGS antenna phase centre variation model applied.
- IGS final orbits and EOPs held fixed.
- Station coordinates for a single station constrained (either TIDB or YAR2).

Seven daily solutions are combined at the normal equation level to obtain the weekly solution output in SINEX format submitted to the CDDIS. These solutions were tightly constrained to the station coordinates from the IGS00 realisation of ITRF2000 at the following IGS reference stations; CAS1, CEDU, DAV1, HOB2, MAC1, PERT, TIDB and YAR2.

The Geoscience Australia RNAAC weekly SINEX solution files were included in the GNAAC combination generated by the Massachusetts Institute of Technology (MIT) and the University of Newcastle upon Tyne Polyhedron solutions.

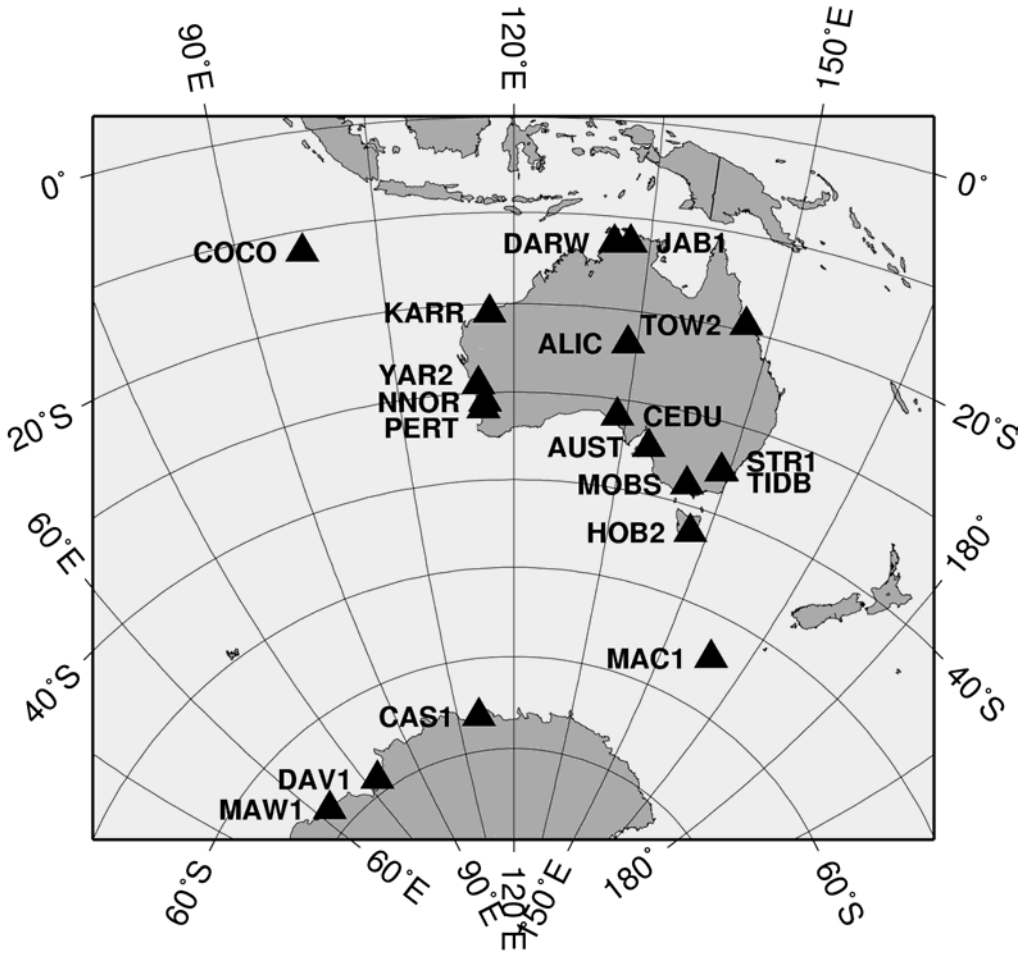

Figure 1. Geoscience Australia RNAAC station network as of 31 December 2002

Other GPS data processing and analysis activity at GA include:

- IGS GPS Tide Gauge Benchmark Monitoring Project as a type A analysis centre.
- The South Pacific Sea Level & Climate Monitoring Project.
- Asia Pacific Regional Geodetic Project (annual observation campaigns).
- Australian South West Seismic Zone monitoring project.
- South Australian Seismic Zone monitoring project.

References

Hugentobler, U., Schaer, S. and Fridez, P. (eds.), Bernese GPS Software Version 4.2, Astronomical Institute, University of Berne, 2001.